

# A Specifications

## Overview

This appendix includes:

- [Paper Specifications](#)
- [Printer Specifications](#)



## Paper Specifications

HP LaserJet printers produce excellent print quality. This printer accepts a variety of media, such as cut-sheet paper (including recycled paper), envelopes, labels, transparencies, and custom-size paper. Properties such as weight, grain, and moisture content are important factors affecting printer performance and output quality.

The printer can use a variety of paper and other print media in accordance with the guidelines in this manual. Paper that does not meet these guidelines may cause the following problems:

- poor print quality
- increased paper jams
- premature wear on the printer, requiring repair

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**Note**

For best results, use only HP brand paper and print media. Hewlett-Packard Company cannot recommend the use of other brands. Because they are not HP products, HP cannot influence or control their quality.

It is possible for paper to meet all of the guidelines in this manual and still not produce satisfactory results. This might be the result of improper handling, unacceptable temperature and humidity levels, or other variables over which Hewlett-Packard has no control.

Before purchasing a large quantity of paper, make sure it meets the



requirements specified in this user guide and in the *HP LaserJet Printer Family Paper Specification Guide*. (To order the guide, see page [36](#).) Always test paper before purchasing a large quantity.

**CAUTION**

Using paper outside HP specifications may cause problems for the printer, requiring repair. This repair is not covered by the Hewlett-Packard warranty or service agreements.



Supported Sizes of Paper for Input and Output

Tray or Bin	Capacity	Paper	Weight
Tray 1 (multipurpose)	up to 100 sheets	<ul style="list-style-type: none"><li>● Paper sizes: Letter, ISO A4, Executive, A5, Legal, 11 x 17, ISO A3, JIS B5, JIS B4, JPostD</li><li>● Custom sizes: Minimum: 3.67 x 7.5 in. (93 x 191 mm) Maximum: 11.7 x 17.7 in. (297 x 450 mm)</li></ul> <p><b>Note:</b> You may print on both sides of paper that is equal to or larger than 5 by 7.5 in. (127 by 191 mm).</p> <ul style="list-style-type: none"><li>● Other media types: transparencies, envelopes, and labels</li></ul> <p><b>Note:</b> It is best to use Tray 1 when printing envelopes, transparencies, and labels.</p>	16 Bond to 53 lb Index (60 to 199 g/m <sup>2</sup> ) Two-sided: 16 to 20 lb Bond (60 to 105 g/m <sup>2</sup> )



Tray or Bin	Capacity	Paper	Weight
Tray 2 and Optional 2 x 500-sheet Input Tray (Tray 4)	up to 500 sheets	Paper sizes: Letter, ISO A4, Legal, JIS B4	16 to 28 lb (60 to 105 g/m <sup>2</sup> )
Tray 3 and Optional 2 x 500-sheet Input Tray (Tray 5)	up to 500 sheets	Paper sizes: Letter, ISO A4, Legal, JIS B4, ISO A3, 11 x 17	16 to 28 lb (60 to 105 g/m <sup>2</sup> )
Optional 2000-sheet Input Tray (Tray 4)	up to 2000 sheets	Paper sizes: Letter, ISO A4, Legal, JIS B4, ISO A3, 11 x 17	16 to 28 lb (60 to 105 g/m <sup>2</sup> )
Standard Output Bin (face-down)	up to 500 sheets	Paper sizes: Letter, ISO A4, A5, Executive, Legal, 11 x 17, ISO A3, JIS B5, JIS B4	
Left Output Bin (face-up)	up to 100 sheets	Paper sizes: Letter, ISO A4, A5, Executive, Legal, 11 x 17, ISO A3, JIS B5, JIS B4	



Tray or Bin	Capacity	Paper	Weight
5-bin Mailbox with Stapler and Multibin Mailbox (8 bins)	up to 250 sheets per bin	Paper sizes: Letter, ISO A4, Legal, JIS B4, ISO A3, 11 x 17, envelopes, transparencies, labels <b>Note:</b> Envelopes, transparencies, and labels are only supported in the left output bin. The staple bin only supports A4, Legal, and Letter paper sizes.	16 to 28 lb (60 to 105 g/m <sup>2</sup> )
7-bin Tabletop Mailbox	up to 120 sheets per bin	Paper sizes: Letter, ISO A4, Legal, 11 x 17, ISO A3, envelopes, transparencies, labels <b>Note:</b> Envelopes, transparencies, and labels are only supported in the left output bin.	16 to 28 lb (60 to 105 g/m <sup>2</sup> )
Envelope Feeder	up to 100 envelopes	Envelope sizes: Commercial #10, C5, DL, Monarch, ISO B5, JPostD	16 to 24 lb (60 to 90 g/m <sup>2</sup> )
Duplexer		Paper sizes: Letter, Legal, 11 x 17, A3, A4, B4	16 to 28 lb (60 to 105 g/m <sup>2</sup> )



## *Supported Types of Paper*

The printer supports the following types of paper:

- plain
- letterhead
- prepunched
- bond
- color
- rough
- preprinted
- transparency
- labels
- recycled
- card stock
- user-defined (5 types)



*Guidelines for Using Paper*

For best results, use conventional 20 lb (75 g/m<sup>2</sup>) paper. Make sure the paper is of good quality, and free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, voids, and curled or bent edges.

If you are unsure what type of paper you are loading (such as bond or recycled), check the label on the package of paper.

Some paper causes print quality problems, jamming, or damage to the printer.

Symptom	Problem with Paper	Solution
Poor print quality or toner adhesion. Problems with feeding.	Too moist, too rough, too smooth, or embossed; faulty paper lot.	Try another kind of paper, between 100-250 Sheffield, 4-6% moisture content.
Dropouts, jamming, curl.	Stored improperly.	Store paper flat in its moisture-proof wrapping.
Increased gray background shading.	Too heavy.	Use lighter paper. Open the left output bin.
Excessive curl. Problems with feeding.	Too moist, wrong grain direction or short-grain construction.	Open the left output bin. Use long-grain paper.





Symptom	Problem with Paper	Solution
Jamming, damage to printer.	Cutouts or perforations.	Do not use paper with cutouts or perforations.
Problems with feeding.	Ragged edges.	<a href="#">Use good quality paper.</a>

**Note**

Do not use letterhead paper that is printed with low-temperature inks, such as those used in some types of thermography.

Do not use raised letterhead.

The printer uses heat and pressure to fuse toner to the paper. Make sure that any colored paper or preprinted forms use inks that are compatible with the printer's temperature (392° F or 200° C for 0.1 second).



Paper Weight Equivalence Table

Use this table to determine approximate equivalent points in weight specifications other than U.S. bond weight. For example, to determine the equivalent of 20 lb U.S. bond weight paper in U.S. cover weight, locate the bond weight (in row 3, second column) and scan across the row to the cover weight (in the fourth column). The equivalent is 28 lb.

Shaded areas indicate a standard weight for that grade.

Paper Weight Equivalence

U.S. Post Card <sup>a</sup> thick-ness (mm)	U.S. Bond Weight (lb)	U.S. Text/ Book Weight (lb)	U.S. Cover Weight (lb)	U.S. Bristol Weight (lb)	U.S. Index Weight (lb)	U.S. Tag Weight (lb)	Europe Metric Weight (g/m <sup>2</sup> )	Japan Metric Weight (g/m <sup>2</sup> )
	16	41	22	27	33	37	60	60
	17	43	24	29	35	39	64	64
	20	50	28	34	42	46	75	75
	21	54	30	36	44	49	80	80



***Paper Weight Equivalence (continued)***

<b>U.S. Post Card<sup>a</sup> thick- ness (mm)</b>	<b>U.S. Bond Weight (lb)</b>	<b>U.S. Text/ Book Weight (lb)</b>	<b>U.S. Cover Weight (lb)</b>	<b>U.S. Bristol Weight (lb)</b>	<b>U.S. Index Weight (lb)</b>	<b>U.S. Tag Weight (lb)</b>	<b>Europe Metric Weight (g/m<sup>2</sup>)</b>	<b>Japan Metric Weight (g/m<sup>2</sup>)</b>
	22	56	31	38	46	51	81	81
	24	60	33	41	50	55	90	90
	27	68	37	45	55	61	100	100
	28	70	39	49	58	65	105	105
	32	80	44	55	67	74	120	120
	34	86	47	58	71	79	128	128
	36	90	50	62	75	83	135	135
.18	39	100	55	67	82	91	148	148
.19	42	107	58	72	87	97	157	157



Paper Weight Equivalence (continued)

U.S. Post Card <sup>a</sup> thick-ness (mm)	U.S. Bond Weight (lb)	U.S. Text/ Book Weight (lb)	U.S. Cover Weight (lb)	U.S. Bristol Weight (lb)	U.S. Index Weight (lb)	U.S. Tag Weight (lb)	Europe Metric Weight (g/m <sup>2</sup> )	Japan Metric Weight (g/m <sup>2</sup> )
.20	43	110	60	74	90	100	163	163
.23	47	119	65	80	97	108	176	176
	53	134	74	90	110	122	199	199

a. U.S. Post Card measurements are approximate. Use for reference only.



## Labels

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**Note** For best results, use Tray 1 and the Left Output Bin.

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**CAUTION** To avoid damaging the printer, use only labels recommended for use in laser printers.

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Never print on the same sheet of labels more than once.

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### Label Construction

When selecting labels, consider the quality of each component:

- **Adhesives:** The adhesive material should be stable at 392° F (200° C), the printer's maximum temperature.
- **Arrangement:** Only use labels with no exposed backing between them. Labels can peel off sheets with spaces between the labels, causing serious jams.
- **Curl:** Prior to printing, labels must lie flat with no more than 0.5 inch (13 millimeters) of curl in any direction.
- **Condition:** Do not use labels with wrinkles, bubbles, or other indications of separation.

To print sheets of labels, see page [115](#).



# Transparencies

**Note** For best results, use Tray 1 and the Left Output Bin.

**CAUTION** Transparencies used in the printer must be able to withstand 392° F (200° C), the printer's maximum temperature. To avoid damaging the printer, use only transparencies recommended for use in laser printers.

If you have problems printing transparencies, use Tray 1.

To print transparencies, see page [117](#).



## Envelopes

**Note** For best results, use the Left Output Bin.

### Envelope Construction

Envelope construction is critical. Envelope fold lines can vary considerably, not only between manufacturers, but also within a box from the same manufacturer. Successful printing on envelopes depends upon the quality of the envelopes. When selecting envelopes, consider the following components:

- **Weight:** See page [258](#) for supported envelope weight.
- **Construction:** Prior to printing, envelopes should lie flat with less than 0.25 inch (6 mm) curl, and should not contain air. (Envelopes that trap air may cause problems.)
- **Condition:** Make sure envelopes are not wrinkled, nicked, or otherwise damaged.
- **Sizes in Tray 1:** See page [256](#) for supported paper sizes.
- **Sizes in the optional envelope feeder:** From 3.5 by 6.3 inches (90 by 160 millimeters) to 7 by 10 inches (178 by 254 millimeters).

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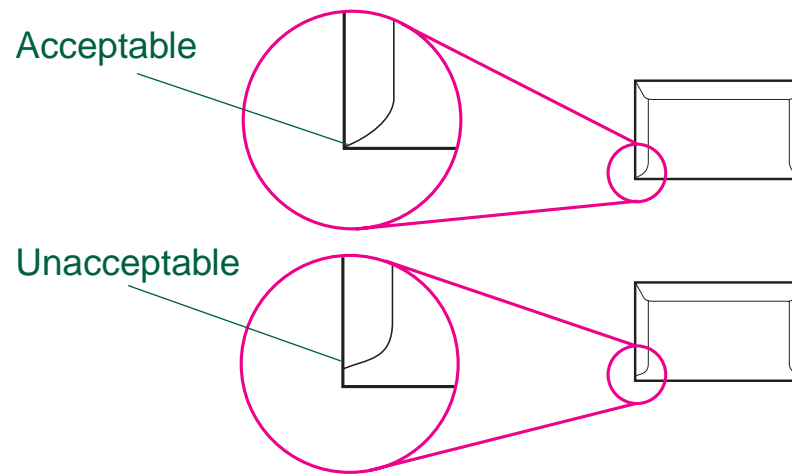
If you do not have an optional envelope feeder, print envelopes from Tray 1, see page [111](#). To print envelopes with the optional envelope feeder, see page [107](#). If envelopes wrinkle, try opening the left output bin.





## ***Envelopes with Double-Side-Seams***

Double-side-seam construction has vertical seams at both ends of the envelope rather than diagonal seams. This style may be more likely to wrinkle. Be sure the seam extends all the way to the corner of the envelope as illustrated below.



## ***Envelopes with Adhesive Strips or Flaps***

Envelopes with a peel-off adhesive strip or with more than one flap that folds over to seal must use adhesives compatible with the heat and pressure in the printer. The extra flaps and strips might cause wrinkling, creasing, or jams.



Envelope Margins

The following table gives typical address margins for a Commercial #10 or DL envelope.

Type of Address	Top Margin	Left Margin
Return Address	0.5 in (12.7 mm)	0.6 in (15.2 mm)
Delivery Address	2 in (51 mm)	4 in (85 mm)

**Note** For the best print quality, position margins no closer than 0.6 inch (15 millimeters) from the edges of the envelope.

Envelope Storage

Proper storage of envelopes helps contribute to good print quality. Envelopes should be stored flat. If air is trapped in an envelope, creating an air bubble, then the envelope may wrinkle during printing.



# Card Stock and Heavy Paper

**Note** For best results, use the Standard Output Bin.

Many types of card stock can be printed from Tray 1, including postcards. Some card stock performs better than others because its construction is better suited for feeding through a laser printer.

For optimum printer performance, do not use paper heavier than 53 lb (199 g/m<sup>2</sup>) in Tray 1 or 28 lb (105 g/m<sup>2</sup>) in other trays. Paper that is too heavy might cause misfeeds, stacking problems, paper jams, poor toner fusing, poor print quality, or excessive mechanical wear.

**Note** Printing on heavier paper may be possible if the tray is not filled to capacity, and paper with a smoothness rating of 100-180 Sheffield is used.



## Card Stock Construction

- **Smoothness:** 36-53 lb (135-199 g/m<sup>2</sup>) card stock should have a smoothness rating of 100-180 Sheffield. 16-36 lb (60-135 g/m<sup>2</sup>) card stock should have a smoothness rating of 100-250 Sheffield.
- **Construction:** Card stock should lie flat with less than 0.2 inch (5 millimeters) of curl.
- **Condition:** Make sure card stock is not wrinkled, nicked, or otherwise damaged.
- **Sizes:** See page [256](#).



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**Note**

Before loading card stock in Tray 1, make sure it is regular in shape and not damaged. Also, make sure the cards are not stuck together.

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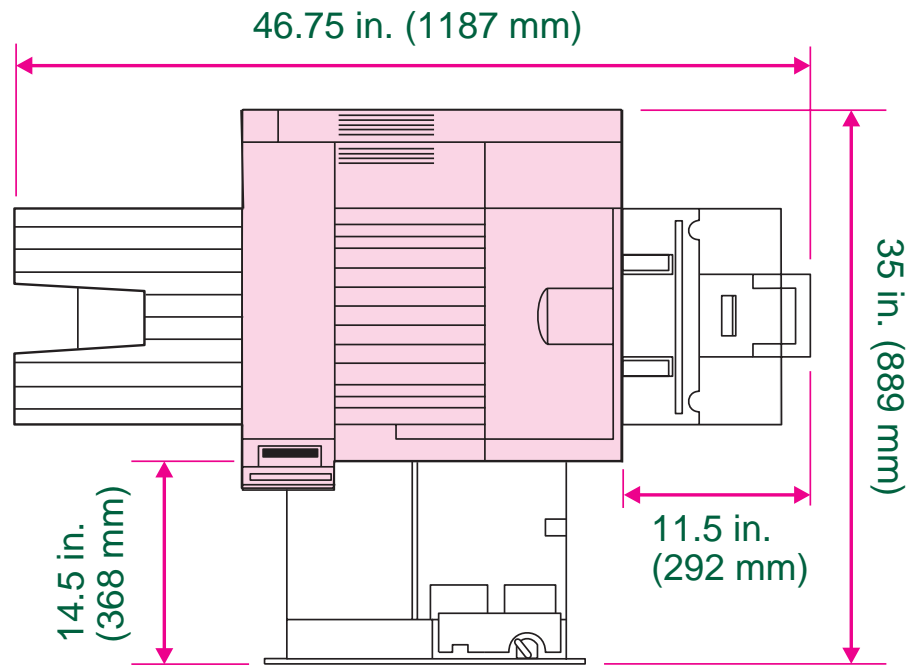
## Card Stock Guidelines

- Set margins at least 0.08 inch (2 mm) away from the edges of the paper.



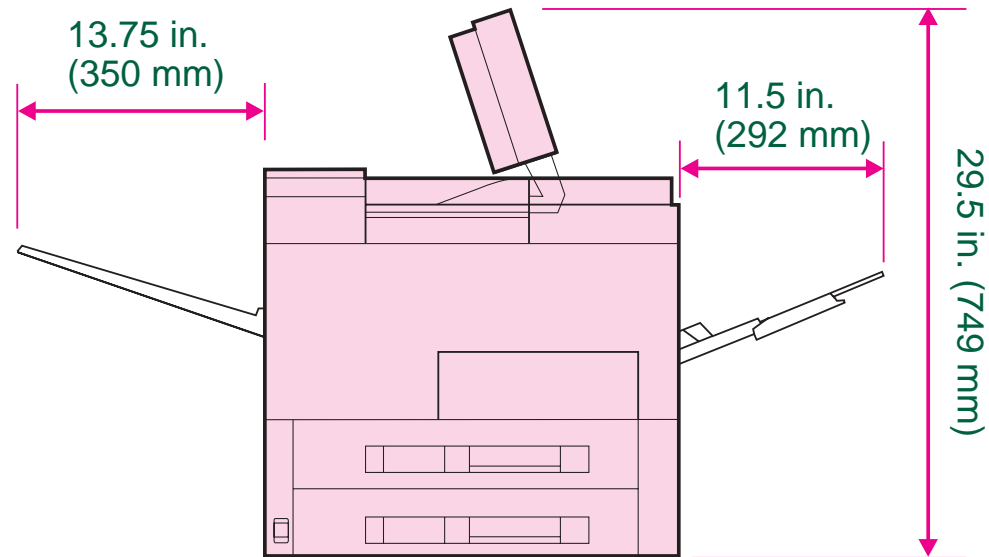
## Printer Specifications

### Physical Dimensions



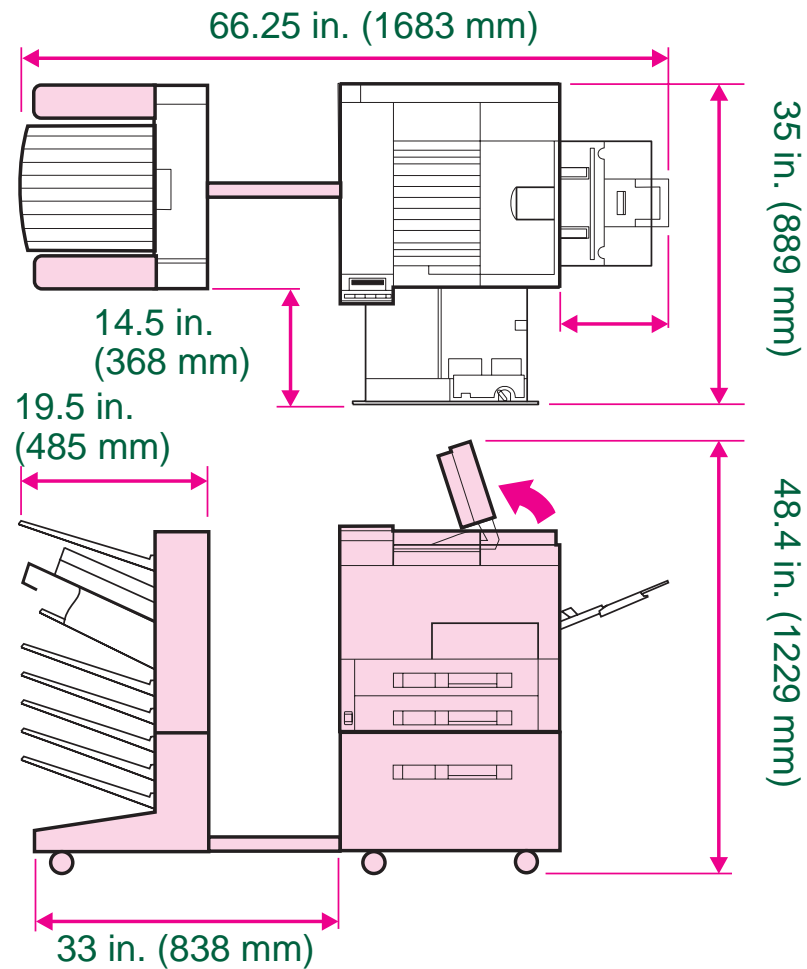
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***Printer Weight (without toner cartridge)***

- HP LaserJet 8000 and 8000 N printers: 48 kg (106 lbs)
- HP LaserJet 8000 DN printer: 51 kg (113 lbs)



Environmental Specifications

Printer State	Power Consumption (average, in watts, base unit)	Power Consumption (average, in watts, fully configured unit)
Printing (100-127V units) (220-240V units)	500 Watts 505 Watts	550 Watts 530 Watts
Standby (100-127V units) (220-240V units)	135 Watts 140 Watts	145 Watts 150 Watts
Power Save (default activation time 60 minutes)	30 Watts 35 Watts	36 Watts (100-127V units) 41 Watts (220-240V units)
Off		0 Watts

Minimum Recommended Circuit Capacity

100-127 Volt	12.8 amps
220-240 Volt	5.8 amps

Printer Specifications





**Power Requirements (Acceptable Line Voltage)**

100-127 Volt (+/- 10%)	50-60 Hz (+/- 2 Hz)
220-240 Volt (+/- 10%)	50 Hz (+/- 2 Hz)
220 Volt (+/- 10%)	60 Hz (+/- 2 Hz)

***Acoustic Emissions (Per ISO 9296)<sup>a</sup>***

	<b>Operating (Printing)<sup>b</sup></b>	<b>Power Save</b>
Sound Power Level	6.6 Bel	5.3 Bel
Sound Pressure Level, L <sub>pAm</sub> (Bystander Position)	51 dB	37 dB
Sound Pressure Level, L <sub>pAm</sub> (Operator Position)	57 dB	42 dB

- a. Specifications are for the LaserJet 8000 (C4085A)
- b. Print speed is 24 ppm



**General Specifications**

Operating temperature	50-91° F (10-32.5° C)
Relative Humidity	20-80%
Speed, in pages per minute (ppm)	24 ppm
Expandable Memory	Up to 192 MB total, combining standard and accessory memory DIMMs.



**Printer Specifications**



# *B Control Panel Menus*

## *Overview*

You can perform most routine printing tasks from the computer through the printer driver or software application. This is the most convenient way to control the printer, and will override the printer's control panel settings. See the help files associated with the software, or for more information on accessing the printer driver, see page [52](#).

You can also control the printer by changing settings in the printer's control panel. Use the control panel to access printer features not supported by the printer driver or software application.

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**Note** Printer driver and software commands override the printer's control panel settings.

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You can print a menu map from the control panel that shows the **current** printer configuration (page [48](#)).  
This appendix lists all the items and **possible** values for the printer. (Default values are listed in the "Item" column.)



Additional menu items can appear in the control panel, depending on the options currently installed in the printer.

See page [231](#) to print a control panel menu map.

This appendix includes:

- [Information Menu](#)
- [Paper Handling Menu](#)
- [Print Quality Menu](#)
- [Printing Menu](#)
- [Configuration Menu](#)
- [I/O Menu](#)
- [EIO Menu \(8000 N/8000 DN\)](#)
- [Resets Menu](#)



# Information Menu

This menu contains printer information pages that give details about the printer and its configuration. To print an information page, scroll to the desired page and press **SELECT**.

Item	Explanation
PRINT MENU MAP	The menu map shows the layout and current settings of the control panel menu items. For more information, see page <a href="#">231</a> .
PRINT CONFIGURATION	The configuration page shows the printer's current configuration. If an HP JetDirect print server card is installed (HP LaserJet 8000 N and 8000 DN printers), a JetDirect configuration page will print out as well. For more information, see page <a href="#">228</a> .
PRINT PCL FONT LIST	The PCL font list shows all the PCL fonts currently available to the printer. For more information, see page <a href="#">232</a> .
PRINT PS FONT LIST	The PS font list shows all the PS fonts currently available to the printer. For more information, see page <a href="#">232</a> .



Item	Explanation
PRINT FILE DIRECTORY	This item appears only when a mass storage device (such as an optional flash DIMM or hard disk) containing a recognized file system is installed in the printer. The file directory shows information for all installed mass storage devices. For more information, see page <a href="#">234</a> .
PRINT EVENT LOG	The event log lists printer events or errors.
SHOW EVENT LOG	This item allows you to view the most recent printer events on the control panel display. Press - <b>VALUE</b> + to scroll through the event log entries.
PRINT PAPER PATH TEST	The paper path test can be used to verify that the paper path is working properly, or to troubleshoot problems with a type of paper. Choose the input tray, output bin, duplexer (if available), and number of copies.



# Paper Handling Menu

When paper handling settings are correctly configured through the control panel, you can print by choosing the type and size of paper from the printer driver or software application. For more information, see page [134](#).

Some items in this menu (such as duplex and manual feed) can be accessed from a software application, or from the printer driver (if the appropriate driver is installed). Printer driver and software application settings override control panel settings. For more information, see page [125](#).

Item	Values	Explanation
ENVELOPE FEEDER SIZE=COM10	For supported paper sizes, see page <a href="#">256</a> .	<p>This item appears only when the optional envelope feeder is installed. Set the value to correspond with the envelope size currently loaded in the envelope feeder.</p> <p><b>Note</b></p> <p>The default indicated here is for 110V printers. The default envelope size for 220V printers is DL.</p>
ENVELOPE FEEDER TYPE=PLAIN	For supported paper types, see page <a href="#">256</a> .	This item appears only when the optional envelope feeder is installed. Set the value to correspond with the envelope type currently loaded in the envelope feeder.



Item	Values	Explanation
TRAY 1 MODE= FIRST	FIRST CASSETTE	Determine how the printer will use Tray 1. FIRST: If paper is loaded in Tray 1, the printer will pull paper from that tray first. CASSETTE: A paper size must be assigned to Tray 1 using the TRAY 1 SIZE option (the next item in this menu when TRAY 1 MODE=CASSETTE). This allows Tray 1 to be used as a reserved tray. For more information, see page <a href="#">131</a> .
TRAY 1 SIZE= LETTER	For supported paper sizes, see page <a href="#">256</a> .	This item appears only when TRAY 1 MODE= CASSETTE. Set the value to correspond with the paper size currently loaded in Tray 1.
TRAY 1 TYPE= PLAIN	For supported paper types, see page <a href="#">256</a> .	This item appears only when TRAY 1 MODE= CASSETTE. Set the value to correspond with the paper type currently loaded in Tray 1.
TRAY 2 TYPE= PLAIN	For supported paper types, see page <a href="#">256</a> .	Set the value to correspond with the paper type currently loaded in Tray 2.
TRAY 3 TYPE= PLAIN	For supported paper types, see page <a href="#">256</a> .	Set the value to correspond with the paper type currently loaded in Tray 3.





Item	Values	Explanation
TRAY 4 TYPE= PLAIN	For supported paper types, see page <a href="#">256</a> .	This item appears only when a fourth paper tray is installed. Set the value to correspond with the paper type currently loaded in Tray 4.
TRAY 5 TYPE= PLAIN	For supported paper types, see page <a href="#">256</a> .	This item appears only when a fifth paper tray is installed. Set the value to correspond with the paper type currently loaded in Tray 5.
PAPER DEST= STANDARD OUTBIN LEFT OUTBIN OPTIONAL BIN	STANDARD OUTBIN LEFT OUTBIN OPTIONAL BIN	This item appears only when a mailbox is installed. Set the value to correspond with the appropriate bin.
MANUAL FEED=OFF	OFF ON	Feed the paper manually from Tray 1, rather than automatically from a tray. When MANUAL FEED=ON and Tray 1 is empty, the printer goes offline when it receives a print job and displays MANUALLY FEED [PAPER SIZE]. For more information, see page <a href="#">133</a> .



Item	Values	Explanation
DUPLEX=OFF	OFF ON	This item appears only when an optional duplexer is installed. Set the value to ON to print on both sides (duplex) or OFF to print on one side (simplex) of a sheet of paper. For more information, see page <a href="#">102</a> .
BINDING= LONG EDGE	LONG EDGE SHORT EDGE	This item appears only when an optional duplexer is installed and the duplex option is on. Choose the binding edge when duplexing (printing on both sides of paper). For more information, see page <a href="#">102</a> .
OVERRIDE A4/LETTER=NO	NO YES	Choose YES to print on letter size paper when an A4 job is sent, but no A4 size paper is loaded in the printer (or to print on A4 size paper when a letter job is sent, but no letter paper is loaded in the printer).



# Print Quality Menu

Some items in this menu can be accessed from a software application, or from the printer driver (if the appropriate driver is installed). Printer driver and software application settings override control panel settings. For more information, see page [125](#).

Item	Values	Explanation
RESOLUTION=	300	Select the resolution from the following values:
FASTRES 1200	600	300: Produces draft print quality at the printer's maximum speed (24 ppm). 300 dpi (dots per inch) is recommended for some bitmapped fonts and graphics, and for compatibility with the HP LaserJet III family of printers.
	FASTRES 1200	600: Produces high print quality at the printer's maximum speed (24 ppm).
		FASTRES 1200: Produces optimum print quality (comparable to 1200 dpi) at the printer's maximum speed (24 ppm).
		<b>Note</b>
		It is best to change the resolution from the printer driver or software application. (Driver and software settings override control panel settings.)



Item	Values	Explanation
RET=MEDIUM	OFF LIGHT MEDIUM DARK	<p>Use the printer's Resolution Enhancement technology (REt) setting to produce print with smooth angles, curves, and edges.</p> <p>All print resolutions, including FastRes 1200, benefit from REt.</p> <p><b>Note</b></p> <p>It is best to change the REt setting from the printer driver or software application. (Driver and software settings override control panel settings.)</p>
ECONOMODE=OFF	OFF ON	<p>Turn EconoMode on (to save toner) or off (for high quality). EconoMode creates draft-quality printing by reducing the amount of toner on the printed page by up to 50%.</p> <p><b>CAUTION</b></p> <p>HP does not recommend full-time use of EconoMode. (If EconoMode is used full-time, it is possible that the toner supply will outlast the mechanical parts in the toner cartridge.)</p> <p><b>Note</b></p> <p>It is best to turn EconoMode on or off from the printer driver or software application. (Driver and software settings override control panel settings.)</p>



Item	Values	Explanation
TONER DENSITY=3	1 2 3 4 5	Lighten or darken the print on the page by changing the toner density setting. The settings range from 1 (light) to 5 (dark), but the default setting of 3 usually produces the best results.  Use a lower toner density setting to save toner. <b>Note</b> It is best to change the toner density from the printer driver or software application. (Driver and software settings override control panel settings.)
CREATE CLEANING PAGE	No value to select.	Press <b>SELECT</b> to print a cleaning page (for cleaning excess toner from the paper path). In order for the cleaning page to work properly, print the page on copier grade paper (not bond or rough paper). Follow the instructions on the cleaning page.
PROCESS CLEANING PAGE	No value to select.	This item appears only after a cleaning page has been generated (as described above). Press <b>SELECT</b> to process the cleaning page.



# Printing Menu

Some items in this menu can be accessed from a software application, or from the printer driver (if the appropriate driver is installed). Printer driver and software application settings override control panel settings. For more information, see page [125](#).

Item	Values	Explanation
COPIES=1	1 to 999	<p>Set the default number of copies by selecting any number from 1 to 999. Press -VALUE + once to change the setting by increments of 1, or hold down -VALUE + to scroll by increments of 10.</p> <p><b>Note</b></p> <p>It is best to set the number of copies from the printer driver or software application. (Driver and software settings override control panel settings.)</p>
PAPER= LETTER (110V printers) and ENVELOPE= COM10 (110V printers)	For supported paper sizes, see page <a href="#">256</a> .	<p>Set the default image size for paper and envelopes. (The item name will change from paper to envelope as you scroll through the available sizes.)</p> <p><b>Note</b></p> <p>The defaults indicated here are for 110V printers. The default paper size for 220V printers is A4. The default envelope size for 220V printers is DL.</p>
CONFIGURE CUSTOM PAPER=NO	NO YES	<p>NO: The custom paper menu items are not accessible.</p> <p>YES: The custom paper menu items appear (see below).</p>



Item	Values	Explanation
UNIT OF MEASURE=INCHES (110V printers) or MILLIMETERS (220V printers)	INCHES MILLIMETERS	This item appears only when CONFIGURE CUSTOM PAPER=YES. Select the unit of measurement for the custom paper size.
X DIMENSION= 11.7 INCHES (110V printers) or 297 MILLIMETERS (220V printers)	For supported paper sizes, see page <a href="#">256</a> .	This item appears only when CONFIGURE CUSTOM PAPER=YES. Select the dimension to be fed into the printer (short edge).
Y DIMENSION= 17.7 INCHES (110V printers) or 450 MILLIMETERS (220V printers)	For supported paper sizes, see page <a href="#">256</a> .	This item appears only when CONFIGURE CUSTOM PAPER=YES. Select the other dimension (long edge).



Item	Values	Explanation
ORIENTATION= PORTRAIT	PORTRAIT LANDSCAPE	Determine the default orientation of print on the page. <b>Note</b> It is best to set the page orientation from the printer driver or software application. (Driver and software settings override control panel settings.)
FORM=60 LINES (110V printers) or 64 LINES (220V printers)	5 to 128	Sets vertical spacing from 5 to 128 lines for default paper size. Press - <b>VALUE</b> + once to change the setting by increments of 1, or hold down - <b>VALUE</b> + to scroll by increments of 10.
PCL FONT SOURCE=INTERNAL	INTERNAL SOFT SLOT 1, 2, or 3	INTERNAL: Internal fonts. SOFT: Permanent soft fonts. SLOT 1, 2, or 3: Fonts stored in one of the three DIMM slots.
PCL FONT NUMBER= 0 to 999 0		The printer assigns a number to each font and lists them on the PCL Font List (page <a href="#">232</a> ). The font number appears in the Font # column of the printout.





Item	Values	Explanation
PCL FONT PITCH= 10.00	0.44 to 99.99	This item might not appear, depending on the font selected. Press -VALUE + once to change setting by increments of .01 for pitch, or hold down -VALUE + to scroll by increments of 1.
PCL FONT POINT SIZE=12.00	4.00 to 999.75	This item might not appear, depending on the font selected. Press -VALUE + once to change setting by increments of .25 for point size, or hold down -VALUE + to scroll by increments of 1.
PCL SYMBOL SET=PC-8	PC-8 many others	Select any one of several available symbol sets from the printer's control panel. A symbol set is a unique grouping of all the characters in a font. PC-8 or PC-850 is recommended for line draw characters.
COURIER=REGULAR	REGULAR DARK	Select the version of Courier font to use: REGULAR: The internal Courier font available on the HP LaserJet 4 series printers. DARK: The internal Courier font available on the HP LaserJet III series printers. Both fonts are not available at the same time.



Item	Values	Explanation
WIDE A4=NO YES	NO YES	The Wide A4 setting changes the number of characters that can be printed on a single line of A4 paper. NO: Up to 78 10-pitch characters can be printed on one line. YES: Up to 80 10-pitch characters can be printed on one line.
APPEND CR TO LF= NO NO YES	NO YES	Select YES to append a carriage return to each line feed encountered in backward-compatible PCL jobs (pure text, no job control). Some environments, such as UNIX, indicate a new line using only the line feed control code. This option allows the user to append the required carriage return to each line feed.
PRINT PS ERRORS=OFF	OFF ON	Select ON to print the PS error page when PS errors occur.



# Configuration Menu

Items in this menu affect the printer's behavior. Configure the printer according to your printing needs.

Item	Values	Explanation
POWERSAVE= 1 HOUR	OFF 15 MINUTES 30 MINUTES 1 HOUR 2 HOURS 3 HOURS	<p>Set the printer to enter Power Save after it has been idle for a specified amount of time. Turning Power Save off is not recommended. The Power Save feature does the following:</p> <p>Minimizes the amount of power consumed by the printer when it is idle.</p> <p>Reduces wear on the printer's electronic components. (Turns off the display's backlight.)</p> <p>When you send a print job, press a control panel key, open a paper tray, or open the top cover, the printer automatically comes out of Power Save mode.</p> <p><b>Note</b></p> <p>Power Save turns off the backlight on the display, but the display is still readable.</p>



Item	Values	Explanation
PERSONALITY= AUTO	AUTO PCL PS	Select the default printer language (personality). Possible values are determined by which valid languages are installed in the printer. Normally you should not change the printer language (the default is AUTO). If you change it to a specific printer language, the printer will not automatically switch from one language to another unless specific software commands are sent to the printer.



Item	Values	Explanation
RESOURCE SAVE=	OFF	<p>This item dedicates printer memory to save each language's permanent resources. (You might need to add memory to the printer in order for this item to appear.) The amount of memory set aside can be different for each installed language. Some languages might have memory set aside for resource saving without requiring all languages to do so. Any time the amount of memory dedicated to a specific language is changed, all languages will lose all saved resources, including any unprocessed print jobs.</p> <p>OFF: No language resource saving is performed, and language-dependent resources, such as fonts and macros, are lost when language or resolution changes.</p> <p>ON: An item will appear for each installed language that allows the user to allocate a particular amount of memory to that language's resource saving area. (See the items below.)</p> <p>AUTO: The printer automatically determines the amount of memory to use for each installed language's resource saving area.</p> <p>For more information, see page <a href="#">316</a>.</p>
	OFF	
	ON	
	AUTO	



Item	Values	Explanation
PCL MEMORY= 400K	0K and up (This value depends on the amount of installed memory.)	This item appears only when RESOURCE SAVE=ON. Select the amount of memory used for saving PCL resources. Printer default is the minimum amount of memory needed to perform resource saving for PCL. Press -VALUE+ to change settings by increments of 10 (up to 100 KB) or by increments of 100 (above 100 KB). For more information, see page <a href="#">316</a> .
PS MEMORY= 400K	0K and up (This value depends on the amount of installed memory.)	This item appears only when RESOURCE SAVE=ON. Select the amount of memory used for saving PS resources. Printer default is the minimum amount of memory needed to perform resource saving for PS. Press -VALUE+ to change settings by increments of 10 (up to 100 KB) or by increments of 100 (above 100 KB). For more information, see page <a href="#">316</a> .
PAGE PROTECT= AUTO	AUTO ON	This item appears only after a 21 PAGE TOO COMPLEX, PRESS GO TO CONTINUE message displays (page <a href="#">178</a> ). Memory Enhancement technology (MEt) attempts to guarantee that all pages will print. If the page does not print, turn PAGE PROTECT to ON. This might increase chances of a 20 INSUFFICIENT MEMORY, PRESS GO TO CONTINUE message. If this occurs, simplify the print job or install additional memory (page <a href="#">310</a> ).



Item	Values	Explanation
CLEARABLE WARNINGS=JOB	JOB ON	Set the amount of time that a clearable warning is displayed on the printer's control panel. JOB: Warning messages display on the control panel until the end of the job from which they were generated. ON: Warning messages display on the control panel until Go is pressed.
AUTO CONTINUE= ON ON	ON OFF	This item determines how the printer reacts to errors. ON: If an error occurs that prevents printing, the message will display, and the printer will go offline for 10 seconds before returning online. OFF: If an error occurs that prevents printing, the message will remain on the display and the printer will remain offline until Go is pressed.
TONER LOW=CONTINUE	CONTINUE STOP	This item determines how the printer behaves when toner is low. The TONER LOW message will first appear when the toner cartridge is almost out of toner. (About 100 to 300 sheets can still be printed.) CONTINUE: The printer will continue to print while the TONER LOW message is displayed. STOP: The printer will go offline and wait for further action. For more information, see page <a href="#">137</a> .



Item	Values	Explanation
RAM DISK=OFF	OFF ON AUTO	<p>This item determines how the RAM disk is configured. This item appears only if there is no optional hard disk installed and the printer has at least 12 MB of memory.</p> <p>OFF: The RAM disk is disabled.</p> <p>ON: The RAM disk is enabled. Configure the amount of memory to be used through the following item: RAM DISK SIZE.</p> <p><b>Note</b></p> <p>If the setting is changed from OFF to ON or from OFF to AUTO, the printer will automatically reinitialize when it becomes idle.</p>
RAM DISK SIZE=xxxK	0K and up (This value depends on the amount of installed memory.)	<p>This item determines the size of the RAM disk. This item appears if RAM DISK=ON or AUTO.</p> <p>Press - <b>VALUE</b> + to change settings by increments of 100.</p> <p><b>Note</b></p> <p>This setting cannot be changed if RAM DISK=AUTO. Changing this value will cause the printer to reinitialize when it becomes idle.</p>





Item	Values	Explanation
JAM RECOVERY= AUTO	AUTO ON OFF	<p>This item determines how the printer behaves when a paper jam occurs.</p> <p>AUTO: The printer automatically selects the best mode for printer jam recovery (usually ON). This is the default setting.</p> <p>ON: The printer automatically reprints pages after a paper jam is cleared.</p> <p>OFF: The printer does not reprint pages following a paper jam. Printing performance might be increased with this setting.</p>
MAINTENANCE MESSAGE=OFF	OFF	<p>This item appears only after the PERFORM PRINTER MAINTENANCE message displays.</p> <p>OFF: The PERFORM PRINTER MAINTENANCE message will be cleared and will not be displayed again until the next maintenance is due.</p> <p>The message should not be turned off unless the printer maintenance has been performed. If the required maintenance is not performed, the printer's performance will degrade.</p>



# I/O Menu

Items in the I/O (input/output) Menu affect the communication between the printer and the computer.

Item	Values	Explanation
I/O TIMEOUT=15	5 to 300	<p>Select the I/O timeout period in seconds. (I/O timeout refers to the time, measured in seconds, that the printer waits before ending a print job.)</p> <p>This setting allows you to adjust timeout for best performance. If data from other ports appear in the middle of your print job, increase the timeout value.</p> <p>Press - <b>VALUE</b> + once to change settings by increments of 1, or hold down - <b>VALUE</b> + to scroll by increments of 10.</p>



Item	Values	Explanation
I/O BUFFER=	AUTO ON OFF	<p>Allocate memory for I/O buffering.</p> <p>AUTO: The printer automatically reserves memory for I/O buffering. Additional configurations are not required and the I/O BUFFER SIZE menu item does not appear.</p> <p>ON: The I/O BUFFER SIZE item appears (see below). Specify the amount of memory to be used for I/O buffering.</p> <p>OFF: I/O buffering is not performed and the I/O BUFFER SIZE item does not appear.</p> <p>When the I/O buffer setting is changed, any downloaded resources (such as fonts or macros) will need to be downloaded again, unless they are stored on an optional hard disk or flash DIMM.</p> <p>For more information, see page <a href="#">318</a>.</p>
I/O BUFFER SIZE= 100K	10K and up	<p>This item appears only when I/O BUFFER=ON. Specify the amount of memory for I/O buffering. The maximum amount of memory available for I/O buffering is determined by the amount of memory installed in the printer, the languages installed in the printer, and by other memory allocations that must be made.</p> <p>Press -VALUE+ to change settings by increments of 10 (up to 100 KB) or by increments of 100 (above 100 KB).</p>



Item	Values	Explanation
PARALLEL HIGH SPEED=YES	YES NO	Select the speed at which data is transmitted to the printer. YES: The printer accepts faster parallel communications used for connections with newer computers. NO: The printer accepts slower parallel communications used for connections with older computers.
PARALLEL ADV FUNCTIONS=ON	ON OFF	Turn the bidirectional parallel communication on or off. The default is set for a bidirectional parallel port (IEEE-1284). This setting allows the printer to send status readback messages to the computer. (Turning the parallel advanced functions on might slow language switching.)



# EIO Menu (8000 N/8000 DN)

EIO (enhanced input/output) Menus depend on the particular accessory product installed in an EIO slot of the printer. If the printer contains an HP JetDirect print server EIO card, you can configure basic networking parameters using the EIO Menu. These and other parameters can also be configured through HP JetAdmin.

Item	Values	Explanation
CFG NETWORK=NO	NO YES	NO: The JetDirect Menu is not accessible. YES: The JetDirect Menu appears.
NOVELL=ON	ON OFF	Select whether the IPX/SPX protocol stack (in Novell NetWare networks, for example) is enabled (on) or disabled (off).
DLC/LLC=ON	ON OFF	Select whether the DLC/LLC protocol stack is enabled (on) or disabled (off).
TCP/IP=ON	ON OFF	Select whether the TCP/IP protocol stack is enabled (on) or disabled (off).



Item	Values	Explanation
ETALK=ON	ON OFF	Select whether the Apple EtherTalk protocol stack is enabled (on) or disabled (off).
CFG NOVELL=NO	NO YES	<p>NO: The IPX/SPX Menu is not accessible.</p> <p>YES: The IPX/SPX Menu appears. In the IPX/SPX Menu, you can specify the frame type parameter used on your network. The default is <code>AUTO</code>, to automatically set and limit the frame type to the one detected.</p> <p>For Ethernet cards, frame type selections include <code>EN_8023</code>, <code>EN_LII</code>, <code>EN_8022</code>, <code>EN_SNAP</code>.</p> <p>For Token Ring cards, frame type selections include <code>TR_8022</code>, <code>TR_SNAP</code>.</p> <p>In the IPX/SPX Menu for Token Ring cards, you can also specify NetWare Source Routing parameters, which include <code>SRC RT=AUTO</code> (default), <code>OFF</code>, <code>SINGLE R</code>, or <code>ALL RT</code>.</p>



Item	Values	Explanation
CFG TCP/IP=NO	NO YES	NO: The TCP/IP Menu is not accessible. YES: The TCP/IP Menu appears. In the TCP/IP Menu, you can specify BOOTP=YES for TCP/IP parameters to be automatically loaded from a bootp or DHCP server when the printer is turned on. If you specify BOOTP=NO, you can manually set selected TCP/IP parameters from the control panel. You can manually set each byte of the IP address (IP), Subnet Mask (SM), Syslog Server (LG), and Default Gateway (GW). Also, you can manually set the Timeout time period.
CFG ETALK=NO	NO YES	NO: The EtherTalk Menu is not accessible. YES: The EtherTalk Menu appears. In the EtherTalk Menu you can set the AppleTalk phase parameter (ETALK PHASE=1 or 2) for your network.



# Resets Menu

Use this menu with caution. You can lose buffered page data or printer configuration settings when you select these items. Only reset the printer under the following circumstances:

- You want to restore the printer’s default settings.
- Communication between the printer and computer has been interrupted.
- You are having problems with a port.

The items in the Resets Menu will clear all memory in the printer, while **CANCEL JOB** clears only the current job.

Item	Explanation
RESET MEMORY	This item clears the printer buffer and the active I/O input buffer, and makes the control panel defaults current. Resetting memory during a print job can result in data loss.
RESTORE FACTORY SETTINGS	This item performs a simple reset and restores most of the factory (default) settings. This item also clears the input buffer for the active I/O. Resetting memory during a print job can result in data loss.





Item	Explanation
RESET ACTIVE I/O CHANNEL	This item performs a simple reset and clears the input and output buffers (for the active I/Os only). Resetting memory during a print job can result in data loss.
RESET ALL I/O CHANNELS	This item performs a simple reset and clears the input and output buffers for all I/Os.



# *C Printer Memory and Expansion*



## *Overview*

The printer has three dual in-line memory module (DIMM) slots for upgrading with:

- More printer memory. DIMMs are available in 4, 8, 16, 32, and 64 MB, for a maximum of 192 MB.
- Flash memory DIMMs, available in 2 and 4 MB. Unlike standard printer memory, flash DIMMs can be used to permanently store downloaded items in the printer, even when the printer is off.
- DIMM-based accessory fonts, macros, and patterns.

**Continued on next page.**



- Other DIMM-based printer languages and printer options.

### Note

Single in-line memory modules (SIMMs) used on previous HP LaserJet printers are not compatible with this printer.

You might want to add more memory to the printer if you often print complex graphics or PS documents, print with the optional duplexer, use many downloaded fonts, and print large paper sizes (such as A3, B4, or 11 x 17).

The printer has three enhanced input/output (EIO) slots for expanding the printer's capabilities with:

- A network card.
- A mass storage device, such as a hard disk.

For ordering information, see page [39](#).

To find out how much memory is installed in the printer, or to find out what is installed in the EIO slots, print a configuration page (page [228](#)).

This appendix includes:

- [Installing Memory](#)
- [Checking Memory Installation](#)
- [Adjusting Memory Settings](#)
- [Installing EIO Cards/Mass Storage](#)



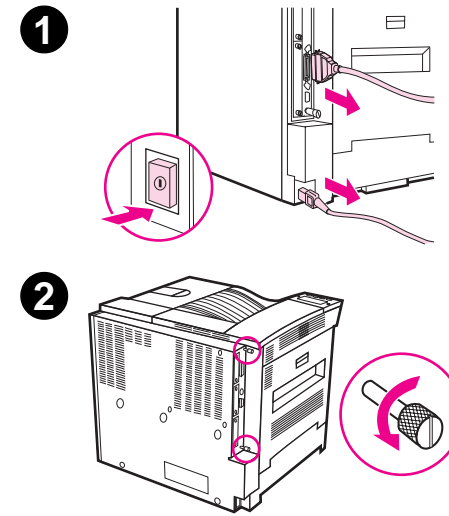
## Installing Memory

### CAUTION

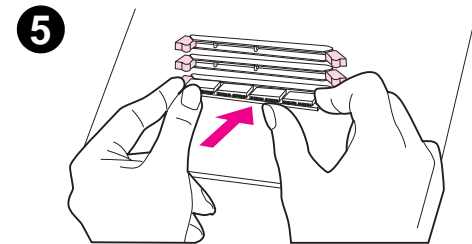
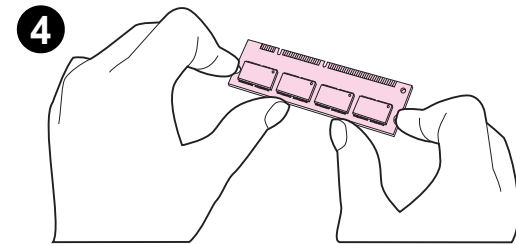
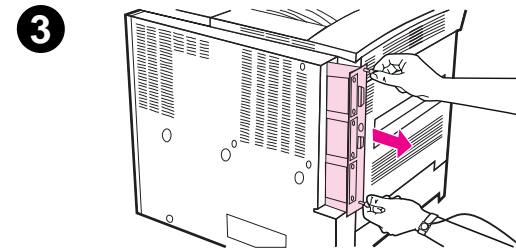
Static electricity can damage dual in-line memory modules (DIMMs). When handling DIMMs, either wear an antistatic wrist strap or frequently touch the surface of the DIMM's antistatic package, then touch bare metal on the printer.

If you have not already done so, print a configuration page to find out how much memory is installed in the printer before adding more memory (page [228](#)).

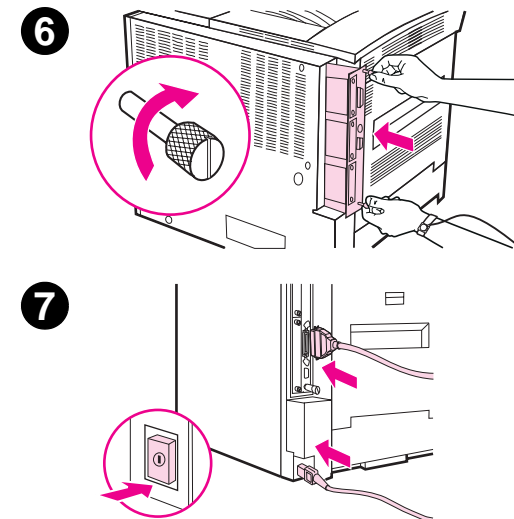
- 1 Turn the printer off. Unplug the power cord and disconnect any cables.
- 2 Loosen the two captive thumb screws on the back of the printer.



- 3 Grasp the screws and pull the formatter board out of the printer. Place it on a flat, non-conductive surface.
- 4 Remove the DIMM from the antistatic package. Hold the DIMM with fingers against the side edges and thumbs against the back edge. Align the notches on the DIMM with the DIMM slot. (Check that the locks on each side of the DIMM slot are open, or outward.)
- 5 Press the DIMM straight into the slot (press firmly). Make sure the locks on each side of the DIMM snap inward into place. (To remove a DIMM, the locks must be released.)



- 6 Slide the formatter board back into the printer and tighten the two screws.
- 7 Plug in the power cord and connect all cables. Turn the printer on.



## Checking Memory Installation

Follow this procedure to verify that DIMMs are installed correctly:

1. Check that the printer's control panel displays **READY** when the printer is turned on. If an error message appears, a DIMM might have been incorrectly installed. Check the printer messages (page [228](#)).
2. Print a new configuration page (page [228](#)).
3. Check the memory section on the configuration page and compare it to the configuration page printed before the DIMM installation. If the amount of memory has not increased, the DIMM might not be installed correctly (repeat the installation procedure) or the DIMM might be defective (try a new DIMM, or try installing the DIMM in a different slot).

---

**Note**

If you installed a printer language (personality), check the Installed Personalities and Options section on the configuration page. This area should list the new printer language.

---



## Adjusting Memory Settings

### Resource Saving

Resource Saving allows the printer to keep downloaded resources (permanent downloaded fonts, macros, or patterns) in memory when the printer language or resolution is changed.

If you do not have an optional hard disk or flash DIMM for storing downloaded resources, you might want to change the amount of memory allocated to each language when downloading an unusually large number of fonts, or if the printer is in a shared environment.

The minimum amount of memory that can be allocated to Resource Saving is 400 KB each for PCL and PS.

#### To determine how much memory to allocate to a language:

1. From the Configuration Menu, set `RESOURCE SAVE=ON` (page [228](#)). You might need to add memory to the printer in order for this option to appear in the printer's control panel.
2. Also from the Configuration Menu, choose either `PCL MEMORY` or `PS MEMORY` and change the setting to the highest value displayed. This amount will vary depending upon how much memory is installed in the printer.

Continued on next page.





3. Using a software application, download all the fonts you want to use in the selected language.
4. Print a configuration page (page [228](#)). The amount of memory used by the fonts is listed next to the language. Round this figure up to the nearest 100 KB. (For example, if 475 KB are shown, 500 KB should be reserved.)
5. From the Configuration Menu, set PCL MEMORY or PS MEMORY to the value determined in step 4.
6. Repeat step 3. (You must download all fonts again. See the note below.)



**Note**

When you change the Resource Saving setting, all downloaded resources (such as fonts or macros) will need to be downloaded again, unless they are stored on an optional hard disk or flash DIMM.



## ***I/O Buffering***

To allow the computer to continue working without waiting for the print job to finish queuing, the printer uses a portion of its memory (an I/O buffer) to hold jobs in progress. (If I/O buffering is off, no memory is reserved for this function.)

In most cases, it is best to let the printer automatically reserve memory for I/O buffering.

To speed network printing, you might want to increase the amount of memory reserved for I/O buffering.

### **To change the I/O Buffer setting:**

1. From the I/O Menu, set I/O BUFFER=ON (page [302](#)).
2. Also from the I/O Menu, set I/O SIZE to the desired value.

---

**Note**

When you change the I/O Buffer setting, all downloaded resources (such as fonts or macros) will need to be downloaded again, unless they are stored on an optional hard disk or flash DIMM.

---



## ***Decreasing Page Processing Time***

The Run Location Menu Item in the Configuration Menu allows you to increase the speed at which printer instructions can be moved from memory to the processor. See “[Configuration Menu](#)” on page [295](#) for more information.



## Installing EIO Cards/Mass Storage

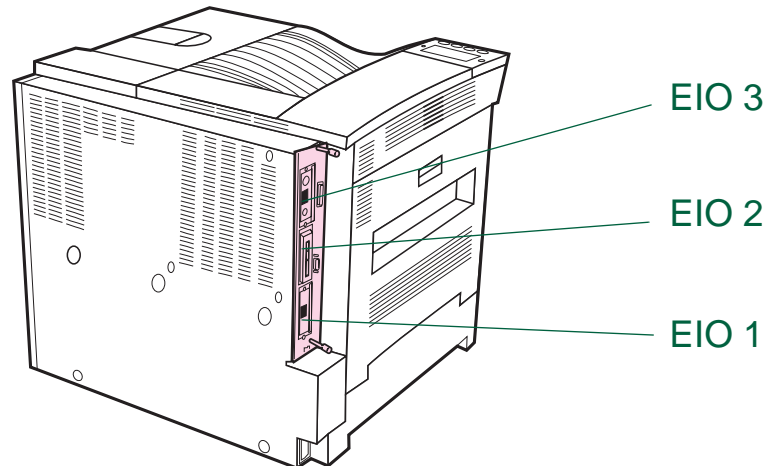
Turn off the printer before installing the EIO cards or mass storage device.

See the graphic below for orientation and location of the EIO cards or optional mass storage device, such as a hard disk.

Use HP JetAdmin to delete files from a mass storage device (page [72](#)). Use HP FontSmart to manage fonts on a mass storage device (page [67](#)). For more information, see the printer software help.

HP is constantly introducing new software tools for use with your printer and accessories. These tools are available from the Internet free of charge. See page [3](#) for how to visit the HP website for more information.

After you have installed a new device, print a configuration page.



# *D Printer Commands*



## *Overview*

Most software applications do not require you to enter printer commands. See your computer and software documentation to find the method for entering printer commands, if needed.

**PCL** PCL printer commands tell the printer which tasks to perform or which fonts to use. This appendix provides a quick reference for users who are already familiar with PCL command structure.

**Note:** The PCL 5e printer driver in this printer is not backward compatible with older printers that use PCL 5e printer drivers.

Unless PCL 5e backward compatibility is required, HP recommends that PCL 6 printer drivers be used to take full advantage of all printer features.



**HP-GL/2** The printer has the ability to print vector graphics using the HP-GL/2 graphics language. Printing in the HP-GL/2 language requires that the printer leave PCL language and enter HP-GL/2 mode, which can be done by sending the printer PCL code. Some software applications switch languages through their drivers.

**PJL** HP's Printer Job Language (PJL) provides control above PCL and other printer languages. The four major functions provided by PJL are: printer language switching, job separation, printer configuration, and status readback from the printer. PJL commands may be used to change printer default settings.

This appendix includes:

- [Understanding PCL Printer Command Syntax](#)
- [Selecting PCL Fonts](#)
- [Common PCL Printer Commands](#)

---

**Note**

The table at the end of this appendix contains commonly used PCL 5e commands (page [327](#)). For a complete listing and explanation of how to use PCL, HP-GL/2, and PJL commands, order the *PCL 5/PJL Technical Reference Documentation Package* (page [36](#)).

To receive more information about printer commands via fax, call HP FIRST (Fax Information Retrieval Service Technology) and request an index for HP LaserJet printers. (See the [HP Support](#) pages at the front of this user guide.)

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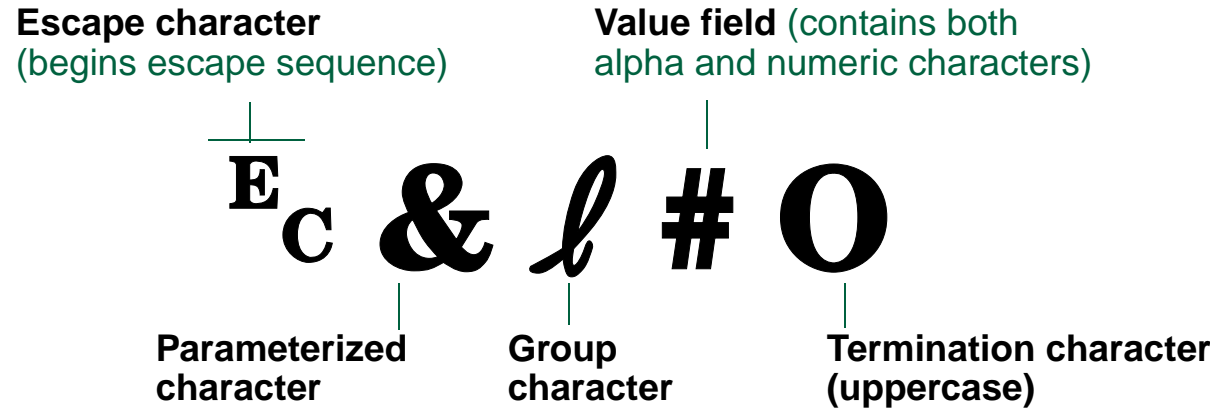


# Understanding PCL Printer Command Syntax

Before using printer commands, compare these characters:

Lowercase l:	ℓ	Uppercase O:	O
Number one:	1	Number 0:	Ø

Many printer commands use the lowercase letter l (ℓ) and the number one (1), or the uppercase letter O (O) and the number zero (Ø). These characters may not appear on your screen as shown here. You must use the exact character and case specified for PCL printer commands.



## Combining Escape Sequences

Escape sequences may be combined into one escape sequence string. There are three important rules to follow when combining code:

1. The first two characters after the  $E_C$  character (the parameterized and group characters) must be the same in all of the commands to be combined.
2. When combining escape sequences, change the uppercase (termination) character in each individual escape sequence to lower case.
3. The final character of the combined escape sequence must be uppercase.

The following is an example of an escape sequence string that would be sent to the printer to select legal paper, landscape orientation, and 8 lines per inch:

$E_C \& l 3 A E_C \& l 1 O E_C \& l 8 D$

The following escape sequence sends the same printer commands by combining them into a shorter sequence:

$E_C \& l 3 a 1 o 8 D$





Entering Escape Characters

Printer commands always begin with the escape character (E<sub>C</sub>).

The following table shows how the escape character can be entered from various DOS software applications.

DOS Software Application	Entry	What Appears
Lotus 1-2-3 and Symphony	Type \027	027
Microsoft Word for DOS	Hold down Alt and type 027 on the numeric keypad	←
WordPerfect for DOS	Type <27>	<27>
MS-DOS Edit	Hold down Ctrl-P, and press Esc	←
MS-DOS Edlin	Hold down Ctrl-V, and press [	^[
dBase	E <sub>C</sub> E <sub>C</sub> CHR(27)+"command"	E <sub>C</sub> E <sub>C</sub> CHR(27)+" "



# Selecting PCL Fonts

Print a PCL Font List to view the command for each internal font (page [232](#)). A sample section is shown below. Notice the two variable boxes for symbol set and point size.



Univers Medium                      Scale                      <esc>(  <esc>(s1p  v0s0b4148T                      I 01

These variables must be filled in or the printer will use defaults. For example, if you want a symbol set that contains line-draw characters, select the 10U (PC-8) or 12U (PC-850) symbol set. Other common symbol set codes are listed in the table on page [327](#).

**Note**

Fonts are either “fixed” or “proportional” in spacing. The printer contains both fixed fonts (Courier, Letter Gothic, and Lineprinter) and proportional fonts (CG Times, Arial®, Times New Roman®, and others).

Fixed-spaced fonts are generally used in applications such as spreadsheets and databases, where it is important for columns to line up vertically. Proportional-spaced fonts are generally used in text and word processing applications.



# Common PCL Printer Commands

Function	Command	Options (#)
<b>Job Control Commands</b>		
Reset	ⒺⒸⒺ	n/a
Number of Copies	ⒺⒸ&Ⓘ#X	1 to 999
2-sided/1-sided printing	ⒺⒸ&Ⓘ#S	0 = Simplex (1-sided) printing 1 = Duplex (2-sided) with long edge binding 2 = Duplex (2-sided) with short edge binding



Function	Command	Options (#)
Page Control Commands		
Paper Source	$\text{E}_c \& l \# H$	0 = prints or ejects current page 1 = Tray 2 2 = manual feed, paper 3 = manual feed, envelope 4 = Tray 1 5 = Tray 3 7 = auto select 8 = Tray 4 20 = Tray 5 21-69 = external trays



Function	Command	Options (#)
Paper size	$\text{E}_\text{C} \& \ell \# \text{A}$	1 = Executive 2 = Letter 3 = Legal 25 = A5 6 = 11 x 17 24 = A6 26 = A4 27 = A3 44 = B6-JIS 45 = B5-JIS 46 = B4-JIS 71 = Postcard (single) 72 = Postcard (double) 80 = Monarch 81 = Commercial 10 90 = DL 91 = International C5 100 = B5 101 = Custom



Function	Command	Options (#)
Paper Type	$\text{E}_\text{C} \& \text{n} \#$	5WdBond = Bond 6WdPlain = Plain 6WdColor = Color 7WdLabels = Labels 9WdRecycled = Recycled 11WdLetterhead = Letterhead 10WdCardstock = Cardstock 11WdPrepunched = Prepunched 11WdPreprinted = Preprinted 13WdTransparency = Transparency #WdCustompapertype = Custom <sup>1</sup>
Orientation	$\text{E}_\text{C} \& \text{l} \# \text{O}$	0 = Portrait 1 = Landscape 2 = Reverse Portrait 3 = Reverse Landscape
Top Margin	$\text{E}_\text{C} \& \text{l} \# \text{E}$	# = number of lines
Text Length (bottom margin)	$\text{E}_\text{C} \& \text{l} \# \text{F}$	# = number of lines from top margin
Left Margin	$\text{E}_\text{C} \& \text{a} \# \text{L}$	# = column number
Right Margin	$\text{E}_\text{C} \& \text{a} \# \text{M}$	# = column number from left margin





Function	Command	Options (#)
Horizontal Motion Index	$\text{E}_C \& k \# H$	1/120-inch increments (compresses print horizontally)
Vertical Motion Index	$\text{E}_C \& l \# C$	1/48-inch increments (compresses print vertically)
Line Spacing	$\text{E}_C \& l \# D$	# = lines per inch (1, 2, 3, 4, 5, 6, 12, 16, 24, 48)
Perforation Skip	$\text{E}_C \& l \# L$	0 = disable 1 = enable



### Cursor Positioning

Vertical Position (Rows)	$\text{E}_C \& a \# R$	# = row number
Vertical Position (Dots)	$\text{E}_C * p \# Y$	# = dot number (300 dots = 1 inch)
Vertical Position (Decipoints)	$\text{E}_C \& a \# V$	# = decipoint number (720 decipoints = 1 inch)
Horizontal Position (Columns)	$\text{E}_C \& a \# C$	# = column number
Horizontal Position (Dots)	$\text{E}_C * p \# X$	# = dot number (300 dots = 1 inch)





Function	Command	Options (#)
Horizontal Position (Decipoints)	$\text{E}_\text{C}\&\text{a}\#\text{H}$	# = decipoint number (720 decipoints = 1 inch)

### Programming Hints

End of Line Wrap	$\text{E}_\text{C}\&\text{s}\#\text{C}$	0 = Enable 1 = Disable
------------------	---	---------------------------

Display Functions On	$\text{E}_\text{C}\text{Y}$	n/a
----------------------	-----------------------------	-----

Display Functions Off	$\text{E}_\text{C}\text{Z}$	n/a
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### Language Selection

Enter PCL Mode	$\text{E}_\text{C}\%\#\text{A}$	0 = Use previous PCL cursor position 1 = Use current HP-GL/2 pen position
----------------	---------------------------------	--

Enter HP-GL/2 Mode	$\text{E}_\text{C}\%\#\text{B}$	0 = Use previous HP-GL/2 pen position 1 = Use current PCL cursor position
--------------------	---------------------------------	--





Function	Command	Options (#)
<b>Font Selection</b>		
Symbol Sets <sup>2</sup>	ESC(#	8U = HP Roman-8 Symbol Set 10U = IBM Layout (PC-8) (code page 437) Default Symbol Set 12U = IBM Layout for Europe (PC-850) (code page 850) 8M = Math-8 19U = Windows 3.1 Latin 1 9E = Windows 3.1 Latin 2 (commonly used in Eastern Europe) 5T = Windows 3.1 Latin 5 (commonly used in Turkey) 579L = Wingdings Font
Primary Spacing	ESC(s#P	0 = fixed 1 = proportional
Primary Pitch	ESC(s#H	# = characters/inch
Set Pitch Mode <sup>3</sup>	ESC&k#S	0 = 10 4 = 12 (elite) 2 = 16.5 - 16.7 (compressed)



Function	Command	Options (#)
Primary Height	Ec(s#V	# = points
Primary Style <sup>2</sup>	Ec(s#S	0 = upright (solid) 1 = italic 4 = condensed 5 = condensed italic
Primary Stroke Wt. <sup>2</sup>	Ec(s#B	0 = medium (book or text) 1 = semi bold 3 = bold 4 = extra bold
Typeface <sup>2</sup>	Ec(s#T	Print a PCL font list to view the command for each internal font (page <a href="#">232</a> ).



<sup>1</sup>For custom paper, replace “Custompapertype” with the name of the paper, and replace the “#” with the number of characters in the name, plus 1.

<sup>2</sup>Order the *PCL 5/PJL Technical Reference Documentation Package* for symbol set charts or for more information (page [36](#)).

<sup>3</sup>The preferred method is to use the primary pitch command.

## *Multibin Mailbox Commands*

Before using these command strings, determine the device identification number of the multibin mailbox by printing a configuration page. The device identification number is located under the heading Installed Personalities and Options. For more information on printing a configuration page, see page [228](#).

The printer must be turned off and on after sending the change mode command in order for the new mode to take effect.

**Continued on next page.**



**DMCMD**

The device management command changes the mailbox mode for the defined device.



**Syntax:** @PJL DMCMD ASCIIHEX = "*asciihexrequest*" <CR><LF>

**Parameters:**

Parameter	Functional Range	Default
ASCIIHEX = "asciihexrequest"	ASCII 33 through 255	N/A

**ASCIIHEX = "*asciihexrequest*"** - This is the string that sends the command to change the mailbox mode for the device. The first ASCIIHEX command changes the mailbox mode; the second ASCIIHEX command turns the printer off and on. @PJL DMCMD ASCIIHEX = "*asciihexrequest*" <CR><LF>

**Example:** The underlined 3 value is the device value determined from the configuration page plus one (1).  
@PJL DMCMD ASCIIHEX = "0400070104010703030214020104"  
<CR><LF>  
@PJL DMCMD ASCIIHEX = "040006020501010301040105"  
<CR><LF>

**Continued on next page.**

***Example to switch to mailbox mode and turn the printer off and on***

```
@%12345X@PJJL
```

```
ORD = 10
```

```
@PJJL JOB PASSWORD = 10
```

```
@PJJL DMCMD ASCIIHEX =  
"0400070104010703030214020104" <CR><LF>
```

```
@PJJL DMCMD ASCIIHEX =  
"040006020501010301040105" <CR><LF>
```

```
@PJJL DEFAULT PASSWORD = 0
```

```
@PJJL EOJ
```

```
@%-12345X
```

**Continued on next page.**



***Example to switch to stacker mode and turn the printer off and on***

@%12345X@PJJL

ORD = 10

@PJJL JOB PASSWORD = 10

@PJJL DMCMD ASCIIHEX =  
"0400070104010703030214020101" <CR><LF>

@PJJL DMCMD ASCIIHEX =  
"040006020501010301040105" <CR><LF>

@PJJL DEFAULT PASSWORD = 0

@PJJL EOJ

@%-12345X

**Continued on next page.**



***Example to switch to separator mode turn the printer off and on***

@%12345X@PJJL

ORD = 10

@PJJL JOB PASSWORD = 10

@PJJL DMCMD ASCIIHEX =  
"0400070104010703030214020102" <CR><LF>

@PJJL DMCMD ASCIIHEX =  
"040006020501010301040105" <CR><LF>

@PJJL DEFAULT PASSWORD = 0

@PJJL EOJ

@%-12345X



# *E Regulatory Information*



## *Overview*

- [FCC Regulations](#)
- [Environmental Product Stewardship](#)
- [Safety Statements](#)





## FCC Regulations

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If this equipment is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase separation between equipment and receiver.
- Connect equipment to an outlet on a circuit different from that to which the receiver is located.
- Consult your dealer or an experienced radio/TV technician.

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**Note**

Any changes or modifications to the printer that are not expressly approved by HP could void the user's authority to operate this equipment.

Use of a shielded interface cable is required to comply with the Class B limits of Part 15 of FCC rules.

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# Environmental Product Stewardship

## Protecting the Environment

Hewlett-Packard Company is committed to providing quality products in an environmentally-sound manner. The printer has been designed to minimize impacts on the environment.



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### The printer design eliminates:

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<b>Ozone Production</b>	The printer uses charging rollers in the electrophotographic process and therefore generates no appreciable ozone gas (O <sub>3</sub> ).
<b>CFC Usage</b>	Class I U.S. Clean Air Act stratospheric ozone-depleting chemicals (chlorofluorocarbons [CFCs], for example) have been eliminated from the manufacturing of the printer and packaging.

The printer design reduces:

**Energy Consumption** Energy usage drops from 500/505 (110V/220V units) watts (W) during printing to as little as 35/40 (110V/220V units) W while in low-power (Power Save) mode. This saves energy without affecting the high performance of the printer. This product qualifies for the ENERGY STAR Program (U.S. and Japan). ENERGY STAR is a voluntary program established to encourage the development of energy-efficient office products. The ENERGY STAR name is a registered service mark of the U.S. Environmental Protection Agency.

As an ENERGY STAR partner, Hewlett-Packard Company has determined that this product meets ENERGY STAR Guidelines for energy efficiency.



**Toner Consumption** EconoMode uses about 50% less toner, thereby extending the life of the toner cartridge.

**Paper use** The printer's optional duplexing feature, which provides for two-sided printing, reduces paper usage and the resulting demands on natural resources.



The design of the printer facilitates the recycling of:

Plastics	Plastic parts have material identification markings, according to international standards, which enhance the ability to identify plastics for proper disposition at the end of the printer's life.
HP Toner Cartridges	In many countries, this product's toner cartridge/drum can be returned to HP using the prepaid shipping label and instructions included inside each new HP Toner Cartridge box. If your country is not listed in the recycling guide, call your local HP Sales and Service Office for further instructions.

Continued on next page.



**HP Cartridge Recycling Program information:**

Since 1990, the HP LaserJet Toner Cartridge Recycling Program has collected more than twelve million cartridges that otherwise may have been discarded into landfills. Once a cartridge is returned, it is disassembled and reusable components are cleaned and inspected for quality conformance. After passing strict inspection procedures, materials such as nuts, screws, and clips are reclaimed and used to produce new cartridges. Remaining materials are melted down and used as raw materials for a variety of other products. Over 95 percent (%) of the weight of returned materials is recycled. For more information in the U.S., call (1) (800) 340-2445 or contact the HP LaserJet Supplies Website at <http://ljsupplies.com/planetpartners>. Non-US customers can call the local HP Sales and Service Office for further information regarding the HP Toner Cartridge Recycling Program.

**Paper**

The printer is suited for the use of recycled papers when the paper meets the guidelines outlined in the *HP LaserJet Printer Family Paper Specifications Guide*.



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**To ensure printer longevity, HP provides the following:**

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<b>Extended Warranty</b>	HP SupportPack covers the printer and all HP-supplied internal components. It is a three-year warranty from the date of purchase. HP SupportPack must be purchased by the customer within 30 days of product purchase. Information on HP SupportPack is available by calling your local HP FIRST number. (See the <a href="#">HP Support</a> pages at the front of this user guide.)
<b>Spare Parts and Consumables Availability</b>	Spare parts and consumable supplies for this product will be made available for at least five years after production has stopped.

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## *Material Safety Data Sheet*

The Toner Cartridge/Drum MSDS can be obtained by calling the U.S. HP FIRST (Fax Information Retrieval Support Technology) at (1) (800) 231-9300. Use Index number 7 for a listing of the Toner Cartridge/Drum Material/ Chemical Safety Data Sheets. Non-U.S. customers should refer to the HP Support pages at the front of this user guide for appropriate phone numbers and information. For more information in the U.S., call (1) (800) 340-2445 or contact the HP LaserJet Supplies Website at <http://ljsupplies.com/planetpartners>

# Environmental Conformity



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**Plastics**

Plastic parts have material identification markings, according to international standards, which enhance the ability to identify plastics for proper disposition at the end of the printer’s life. The plastics used in the printer housing and chassis are technically recyclable.

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**Printer and Parts** Design for recycling has been incorporated into the printer and its accessories. The number of materials has been kept to a minimum while ensuring proper functionality and high product reliability. Dissimilar materials have been designed to separate easily. Fasteners and other connections are easy to locate, access, and remove with common tools. High priority parts have been designed to be accessed quickly for efficient disassembly and repair. Plastic parts have been primarily designed in two colors to enhance recycling options. A few small parts are colored specifically to highlight customer access points.

HP disposes of returned products in an environmentally sound manner. Many of the functional parts are recovered, tested, and reused as fully-warrantied service parts. Used printer parts are not placed into new product manufacturing. The remainder of the product parts are recycled, if possible. For product take-back information, contact your local HP Sales and Service Office (page [245](#)).

**Paper** The printer is suited for the use of recycled papers when the paper meets the guidelines outlined in the *HP LaserJet Printer Family Paper Specifications Guide*. The printer is suited for the use of recycled paper according to DIN 19 309.

**Acoustics** It is advisable to place printers with a sound power level of  $L_{wad}$  of 6.3 Bel (A) or higher into a separate or divided up room.

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## Declaration of Conformity

according to ISO/IEC Guide 22 and EN45014

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**Manufacturer's Name:** Hewlett-Packard Company

**Manufacturer's Address:** 11311 Chinden Boulevard  
Boise, Idaho 83714-1021, USA

**declares, that the product**

**Product Name:** HP LaserJet 8000, 8000 N, 8000 DN, HP Mopier 240

**Model Numbers:** C4085A, C4086A, C4087A, C4228A

**Product Options:** ALL

**conforms to the following Product Specifications:**

**Safety:** IEC 950:1991+A1+A2+A3 / EN 60950:1992+A1+A2+A3

IEC 825-1:1993 / EN 60825-1:1994 Class 1 (Laser/LED)

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*Declaration of Conformity*



EMC:

CISPR 22:1993+A1 / EN 55022:1994 Class B <sup>1)</sup>

CISPR 22:1993+A1 / EN 55022:1994 Class A

EN 50082-1:1992

IEC 801-2:1991 / prEN 55024-2:1992 -

4 kV CD, 8 kV AD

IEC 801-3:1984 / prEN 55024-3:1991 -

3 V/m

IEC 801-4:1988 / prEN 55024-4:1992 -

0.5 kV Signal Lines

1.0 kV Power Lines

FCC Title 47 CFR, Part 15 Class B <sup>2)</sup> / ICES-003, Issue 2 / VCCI-B <sup>1)</sup>

AS / NZS 3548:1992 / CISPR 22:1993 Class B <sup>1)</sup>



### **Supplementary Information:**

The product herewith complies with the requirements of the following Directives and carries the CE-marking accordingly:

the EMC directive 89/336/EEC



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the Low Voltage Directive 73/23/EEC



The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.



This Device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



This printer contains Local Area Network (LAN) options. When the Interface Cable is attached to either of the IEEE 802.3 connectors, the printer meets the requirements of EN 55022 Class A.

January 15, 1997

**For Compliance Information ONLY, contact:**

Australia Contact: Product Regulations Manager, Hewlett-Packard Australia Ltd., 31-41 Joseph Street, Blackburn, Victoria 3130, Australia



European Contact: Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department HQ-TRE / Standards Europe, Herrenberger Straße 130, D-71034 Böblingen (FAX: +49-7031-14-3143)



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USA Contact:

Product Regulations Manager, Hewlett-Packard Company,  
PO Box 15 Mail Stop 160, Boise, ID 83707-0015 (Phone:  
208-396-6000)

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## Safety Statements

### Laser Safety Statement

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration has implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States. The printer is certified as a “Class 1” laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

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**WARNING!**

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Using controls, making adjustments, or performing procedures other than those specified in this user's guide may result in exposure to hazardous radiation.

### Canadian DOC Regulations

Complies with Canadian EMC Class B requirements.

<<Conforme à la classe B des normes canadiennes de compatibilité électromagnétiques. << CEM>>.>>



## VCCI Statement (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づく第二種情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。  
取り扱い説明書に従って正しい取り扱いをして下さい。



## Korean EMI statement

사용자 안내문 (B급 기기)

이 기기는 비업무용으로 전자파장애검정을 받은 기기로서, 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.



## Laser Statement for Finland

### LASERTURVALLISUUS

### LUOKAN 1 LASERLAITE

### KLASS 1 LASER APPARAT

HP LaserJet 8000, 8000 N, 8000 DN -laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalisessa käytössä kirjoittimen suojakoteloitinta estää lasersäteiden pääsyn laitteen ulkopuolelle.

Laitteen turvallisuusluokka on määritetty standardin EN 60825-1 (1993) mukaisesti.

### VAROITUS !

Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

### WARNING !

Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

### HUOLTO



HP LaserJet 8000, 8000 N, 8000 DN -kirjoittimen sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan sen huoltamiseen koulutettu henkilö. Tällaiseksi huoltotoimenpiteeksi ei katsota väriainekasetin vaihtamista, paperiradan puhdistusta tai muita käyttäjän käsikirjassa lueteltuja, käyttäjän tehtäväksi tarkoitettuja ylläpitotoimia, jotka voidaan suorittaa ilman erikoistyökaluja.

**VARO !**

Mikäli kirjoittimen suojakotelo avataan, olet alttiina näkymättömälle lasersäteilylle laitteen ollessa toiminnassa. Älä katso säteeseen.

**VARNING !**

Om laserprinterns skyddshölje öppnas då apparaten är i funktion, utsätts användaren för osynlig laserstrålning. Betrakta ej strålen.

Tiedot laitteessa käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 770-795 nm

Teho 5 mW

Luokan 3B laser

